

REMARKS

Claims 1-10 are pending in this application. Claims 1-10 currently stand rejected. In view of the following remarks, reconsideration of the rejection is respectfully requested. No claims are amended, cancelled, or added.

The Examiner has rejected claims 1-10 under U.S.C. § 103(a) as being unpatentable over U.S. Patent application Pub. No. US 2001/0017746 A1 to Nishida et al. ("Nishida") in view of U.S. Patent No. 5,311,387 to Mallary ("Mallary"). Applicant respectfully traverses this rejection because Nishida, either alone or in combination with Mallary, does not disclose or suggest the combination of features recited by claims 1-10.

In particular, claim 1 recites a perpendicular magnetic recording head, including, among other things:

an auxiliary pole connected to the main pole on a trailing side to the main pole and having a multilayered structure in which a nonmagnetic layer is sandwiched between magnetic layers.

Thus, claim 1 recites *inter alia*, that an auxiliary pole is connected to the main pole on a trailing side (following a separate leading side) of the main pole *and* has a multilayered structure containing a nonmagnetic layer in between magnetic layers.

Similarly, claim 2 recites a perpendicular magnetic recording head, including, among other things:

an auxiliary pole connected to the main pole on a leading side to the main pole; and  
a write shield arranged apart from the main pole on a trailing side to the main pole and having a multilayered structure in which a nonmagnetic layer is sandwiched between magnetic layers.

Thus, claim 2 recites *inter alia*, that an auxiliary pole is connected to the main pole on the leading side of the main pole *and* has a write shield structure arranged separate from the main pole, located relative to the trailing side of the main pole *and* has a multilayered structure containing a nonmagnetic layer in between magnetic layers.

Similarly, claim 6 recites a magnetic disc apparatus, including, among other things:

a perpendicular magnetic recording head comprising a main pole configured to generate a recording magnetic field in a perpendicular direction, and an auxiliary pole connected to the main pole on a trailing side to the main pole and having a multilayered structure in which a nonmagnetic layer is sandwiched between magnetic layers.

Thus, claim 6 recites *inter alia*, a perpendicular magnetic recording head includes a main pole for generating a recording magnetic field in a perpendicular direction, an auxiliary pole connected to the main pole on the trailing side of the main pole *and* has a multilayered structure containing a nonmagnetic layer in between magnetic layers.

Similarly, claim 7 recites a magnetic disc apparatus, including, among other things:

a perpendicular magnetic recording head comprising a main pole configured to generate a recording magnetic field in a perpendicular direction, an auxiliary pole connected to the main pole on a leading side to the main pole, and a write shield arranged apart from the main pole on a trailing side to the main pole and having a multilayered structure in which a nonmagnetic layer is sandwiched between magnetic layers.

Thus, claim 7 recites *inter alia*, a perpendicular magnetic recording head includes a main pole for generating a recording magnetic field in a perpendicular direction, an auxiliary pole connected to the main pole on the leading side of the main pole *and* has a write shield structure arranged separate from the main pole, located relative to the trailing side of the main pole *and* has a multilayered structure containing a nonmagnetic layer in between magnetic layers.

However, as admitted in the Office Action at page 2, regarding claims 1, 2, 6, and 7, Nishida “does not show the auxiliary pole having a multilayered structure in which a nonmagnetic layer is sandwiched between magnetic layers, and a write shield arranged apart from the main pole on a trailing side to the main pole and having a multilayered structure in which the nonmagnetic layer is sandwiched between magnetic layers.” Rather, Nishida discloses a structure that is quite different from that of the present invention.

First, as illustrated in Figs. 5 and 6 of Nishida, for example, the lower shield 7, auxiliary pole 2, and main pole 1 are arranged from the leading side to the trailing side, as defined with respect to operation of the magnetic head. See, for example, Nishida at paragraph [0041]. This construction differs from the recitations in claims 1, 2, 6, and 7. In claims 1 and 6, the auxiliary pole trails the main pole. In Nishida, the auxiliary pole 2 leads the main pole 1. In claims 2 and 7, the main pole trails the auxiliary pole, and a write shield trails the main pole. In Nishida, no write shield is described, let alone a write shield that trails the main pole. In addition, as recognized by the Examiner, Nishida fails to describe the additional structure of an auxiliary pole or a write shield with a multilayered structure in

which a nonmagnetic layer is sandwiched between magnetic layers. These deficiencies, among others, render Nishida as particularly inapplicable to claims 1-10.

Mallary fails to make up the deficiencies noted with respect to Nishida. Mallary does not disclose any equivalent for the auxiliary pole or the write shield of the present invention. Rather, Mallary discloses a three-pole magnetic recording head with at least two of the specific three poles working in cooperation during either a read or write process. That is, at least two magnetic heads combine their respective magnetic field strengths to either operate in a cooperative recording (write) or a shielding function during playback (read). See, for example, column 2, lines 65-68. Specifically, the process employed by Mallary involves a coordination of pole 14 with pole 12 during a write function, and a coordination of pole 16 with pole 12 for shielding during a read function. Clearly, during at least the write function when poles 14 and 12 cooperate, the resultant electric field will saturate the given side shield 26. See, for example, column 2, lines 36-37. Therefore, when the pole 14 cooperates with pole 12, the effective shielding of pole 14 and 12 is negated.

As Mallary is understood, and as the foregoing makes apparent, the pole 14 works with the pole 12. See, for example, column 2, lines 65-67. Accordingly, as would be understood by those skilled in the art, the poles 12 and 14 act in a manner akin to the main pole recited by claims 1-10 of the present invention. As a result, the Applicant respectfully submits that Mallary fails to describe either an auxiliary pole or a write shield as recited by claims 1-10. At least for this reason, Mallary is not properly combinable with Nishida to render obvious any of claims 1-10.

Therefore, Applicant respectfully submits that a *prima facie* case of obviousness has not been established with the combination of Nishida and Mallary, and the rejection under § 103 must be withdrawn.

For at least the reasons discussed above, independent claims 1, 2, 6, and 7 are distinguishable over the combination of Nishida and Mallary. Furthermore, claims 3-5, and 8-10 which depend from independent claims 2 and 7, respectively, further limit independent claims 2 and 7. Thus, at least for the reasons set forth above with respect to claims 2 and 7, the rejection of claims 3-5 and 8-10 is also improper and must be withdrawn.


In view of the above remarks, it is respectfully submitted that all of the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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